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Method for inserting data into a timer for a video recording device

5   ## Field of the invention

This invention relates to a method for inserting additional data, e.g. program title, into a timer for a video recording device.

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Background

-When a number of timers are set up in a video recording
15   device, e.g. Personal Video Recorder (PVR), it is convenient
for the user if the list of timers contains additional
information, e.g. the titles of the programs to be recorded.
This information may be entered interactively, e.g. by using
an on-screen keyboard, or may be obtained e.g. from an
20   Electronic Program Guide (EPG) which is an additional service
of most video content providers. However, some video content
providers do not offer said service, or offer it for
additional costs so that some customers decide not to acquire
the service. In these cases channel, date and time, or maybe a
25   kind of code number, must be entered when setting up the timer
of a video recorder. Therefore, when the pre-programmed timers
are listed on the screen, the titles and other additional data
are not displayed, only channel, date and time. When the list
is long, e.g. comprising a number of episodes of various
30   series or other recurring programs, it is difficult to
overview.

Further, in almost all publicly used video standards there is a possibility to transmit additional information in the vertical blanking interval (VBI), like teletext in Europe or Closed Captioning in the U.S. Various devices exist for

5   extracting and decoding such information. In some cases also the title of the currently transmitted program is included in this information, e.g. for the NTSC standard it may be transmitted in line 21 according to the EIA/CEA-608-B standard.

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Summary of the invention

The problem to be solved by the invention is that program

15   information, e.g. the program title or program type, is missing for recurring timers if a video recording device has no access to an EPG. This problem is solved by the method disclosed in claim 1. An apparatus using this method is disclosed in claim 7.

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According to the invention, additional information data regarding a program is extracted from the VBI, while a program being part of a series is recorded, and this data is added to the timer information for all future parts of this series, so

25   that the data may be displayed when the pre-programmed timers are listed. Whether or not a pre-programmed timer is part of a series of timers, can be detected e.g. by the way it was programmed, namely as a recurring timer.

30   Advantageous embodiments of the invention are disclosed in the dependent claims, the figures and the following detailed description.

Brief description of the drawings

Exemplary embodiments of the invention are described with
reference to the accompanying drawings, which show in

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    Fig.1 an exemplary system for extracting additional data from
    the VBI;

    Fig.2 an on-screen display for detailed timer information;

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    Fig.3 a list of timers without program names; and

    Fig.4 a list of timers with program names added.

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Detailed description of the invention

According to the invention, additional program information,
e.g. the program title, is extracted from the information
20 received in the VBI, and inserted into the list of timers if a
program is being recorded due to a recurring timer. An
exemplary block diagram of a digital system using the
inventive method is depicted in Fig.1. An NTSC input signal 1
is received and decoded in a decoder 2 into a CCIR656 digital
25 video stream. Then the additional information from line 21 is
separated from said digital video stream, and decoded in a
slicer 3. The resulting audio and video (AV) stream is sent to
an MPEG (Motion Picture Expert Group) encoder 4, and the MPEG
encoded signal is stored on a digital storage medium 5, e.g.
30 hard disk drive, while the additional information decoded by
the slicer 3 is processed by a processing unit 6. The

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processing unit 6 detects e.g. the program title and sends it
to the storage medium 5, which stores the information in a
file associated with the recorded AV stream. For reproduction
of said AV stream the recorded data are read from the storage
5   medium 5 and then transferred to an MPEG decoder 7. The
decoded AV stream is transferred to a display control unit 8
that converts the AV stream and the data read from the file
associated with said AV stream into display data. The
information about how to convert the data from said file to
10   pixels of the display is received from a graphics generator,
which may be implemented as part of the processing unit 6.
Further, the display control unit 8 encodes the display data
and provides an NTSC formatted signal 9 for output on a TV.

15   When details of a recurring timer are displayed, the screen
presented to the user may look like shown in Fig.2. It
displays an identifier 11 for the current timer and the
information entered by the user, namely channel and time 10 of
the program to be recorded, and the information that this is a
20   recurring timer 12, e.g. daily or weekly. The identifier 11
may be used as default title string in a list of timers.

Fig.3 shows a screen displaying the list of timers, after
programming a recurring timer 21, but before recording for the
25   first time a program relating to said recurring timer. The
display contains a default title string 21, the day 22, time
23 and channel 24 of the next timer instance, and various
other timers 26 with their respective data. In this example
recurring timers are denoted by a day display 22, while non-
30   recurring timers are denoted by a day-month display 25.

According to the invention, the list of timers may be modified
as shown in Fig.4 when for the first time a program relating

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to the recurring timer 21 is recorded. The list may still
display day 32, time 33 and channel 34 of the recurring timer
31, and other timers 35, but the default title string for the
recurring timer 31 is replaced with the actual program title
5   extracted from the VBI.

In one embodiment of the invention the described insertion of
extracted additional data is performed only if said additional
data are not already stored for a recurring timer, e.g. when
10   the recurring timer records for the first time. In another
embodiment of the invention the extracted additional data are
inserted whenever a program is recorded due to a recurring
timer, possibly overwriting previously inserted information.
In a third embodiment of the invention the stored data of the
15   recurring timer may be compared to the additional data that
are being received with the currently recorded program, and
modified only if they have changed.

Alternatively to using a single line for a recurring timer
20   when displaying a list of timers, it is possible to list
several or all instances of a recurring timer. In this case
the additional data may be extracted as described before, and
displayed with every displayed instance of the recurring
timer.
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Advantageously, the described method for adding information to
a recurring timer may be used in video or AV recording
devices, but also in other recording devices that can be
programmed using recurring timers and that receive additional
30   information while recording. The additional information may be
e.g. program title, program type like sports or children
program or program classification, like not being appropriate
for children.